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Claims:

1 The use of a composition of PKB, its analogues, isoforms, inhibitors, activators and/or the functional equivalents thereof, to regulate glycogen metabolism and/or protein synthesis.

2 The use of a composition of PKB, its analogues, isoforms, inhibitors, activators and/or the functional equivalents thereof, for the manufacture of a medicament to regulate glycogen metabolism and/or protein synthesis.

3 The use as claimed in claim 1 or claim 2, to combat disease states where glycogen metabolism and/or protein synthesis exhibits abnormality.

4 The use as claimed in claim 1, 2 or 3, to combat diabetes.

5 The use as claimed in any preceding claim, to combat cancer.

6 The use as claimed in claim 5, wherein the cancer is breast, pancreatic or ovarian cancer.

7 The use as claimed in any preceding claim, wherein the PKB is PKB α , β or γ , an analogue, isoform, inhibitor, activator or a functional equivalent thereof.

8 The use as claimed in any preceding claim, wherein the PKB, its analogue, isoform, or functional equivalent is modified at one or both of amino acids 308 and 473 by phosphorylation and/or mutation.

9 A composition of PKB, its analogues, isoforms,
inhibitors, activators and/or the functional
equivalents thereof.

10 A peptide having or including the amino acid
sequence Arg-Xaa-Arg-Yaa-Zaa-Ser/Thr-Hyd, where Xaa is
any amino acid, Yaa and Zaa are any amino acid, and Hyd
is a large hydrophobic residue, or a functional
equivalent of such a peptide.

11 A peptide as claimed in claim 10, wherein Hyd is
Phe or Leu, or a functional equivalent thereof.

12 A peptide as claimed in claim 10 or claim 11,
wherein Yaa or Zaa or both are an amino acid other than
glycine.

13 A peptide as claimed in claim 10, having the amino
acid sequence GRPRTSSFAEG, or a functional equivalent
thereof.

14 A method of identifying agents able to influence
the activity of GSK3, said method comprising:

- a. exposing a test substance to a substrate of GSK3;
and
- b. detecting whether said substrate has been
phosphorylated.

15 A method of identifying agents which influence the
activity of PKB, comprising:

- a. exposing a test substance to a sample containing
PKB, to form a mixture;
- b. exposing said mixture to a peptide as claimed in
claim 10, 11, 12 or 13; and

c. detecting whether (and, optionally, to what extent) said peptide has been phosphorylated.

16 A method as claimed in claim 14 or 15, wherein the extent of phosphorylation of the peptide is determined.

17 A method as claimed in claim 15, wherein the phosphorylation state(s) of one or both of amino acids 308 and 473 on PKB is determined.

18 A method as claimed in any one of claims 14 to 17, wherein the test substance is an analogue, isoform, inhibitor, or activator of PKB.

19 A method as claimed in any one of claims 14 to 18, wherein steps a or b (or both) are carried out in the presence of divalent cations and ATP.

20 A method of treatment of the human or non-human animal body, said method comprising administering PKB, its analogues, inhibitors, stimulators or functional equivalents thereof to said body.

21 A method as claimed in claim 20, to combat disease states where glycogen metabolism and/or protein synthesis exhibits abnormality.

22 A method as claimed in claim 20 or 21, to combat diabetes.

23 A method as claimed in claim 20 or 22, to combat cancer.

24 A method as claimed in claim 23, wherein the cancer is breast, pancreatic or ovarian cancer.

1 25 A method as claimed in any one of claims 20 to 24,
2 wherein the PKB is PKB α , β or γ , an analogue, isoform,
3 inhibitor, activator or a functional equivalent
4 thereof.

5

6 26 An agent capable of influencing the activity of
7 PKB, its isoforms, analogues and/or functional
8 equivalents, by modifying amino acids 308 and/or 473 by
9 phosphorylation or mutation.

10

11 27 A method of determining the ability of a substance
12 to affect the activity or activation of PKB, the method
13 comprising exposing the substance to PKB and
14 phosphatidyl inositol polyphosphate and determining the
15 interaction between PKB and the phosphatidyl inositol
16 polyphosphate.

17

18 28 A method of determining the ability of a substance
19 to combat diabetes, cancer, or any disorder which
20 involves irregularity of protein synthesis or glycogen
21 metabolism, the method comprising exposing the
22 substance to PKB and phosphatidyl inositol
23 polyphosphate and determining the interaction between
24 PKB and the phosphatidyl inositol polyphosphate.

25

26 29 A method as claimed in claim 27 or claim 28,
27 wherein the interaction between PKB and the
28 phosphatidyl inositol polyphosphate is measured by
29 assessing the phosphorylation state of PKB.

30

31 30 A method as claimed in claim 29, wherein the
32 phosphorylation state of PKB at T308 and/or S473 is
33 assessed.

34

35 31 A method of identifying activators or inhibitors
36 of GSK3 comprising exposing the substance to be tested

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1 to GSK3 and determining the state of activation of
2 GSK3.

3
4 32 A method as claimed in claim 31 wherein the state
5 of activation of GSK3 is determined by assessing its
6 phosphorylation.

7
8 33 A method of determining the suitability of a test
9 substance for use in combatting diabetes, cancer, or
10 any disorder which involves irregularity of protein
11 synthesis or glycogen metabolism, the method comprising
12 exposing the substance to be tested to GSK3 and
13 determining the state of activation of GSK3.

14
15 34 A method for screening for inhibitors or
16 activators of enzymes that catalyse the phosphorylation
17 of PKB, the method comprising exposing the substance to
18 be tested to

- 19 - one or more enzymes upstream of PKB;
20 - PKB; and (optionally)
21 - nucleoside triphosphate

22 and determining whether (and optionally to what extent)
23 the PKB has been phosphorylated on T308 and/or S473.

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